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Filed: 19 August 2003

For: DENTAL CROWN FORMS AND METHODS

The anticipation rejection of independent claim 1 must be withdrawn because Kahn does not teach a dental crown form that includes hardenable dental material for forming a dental crown located within the tooth-shaped volume. Instead, Kahn describes a device 16 that is "filled with wax, self-curing plastic, e.g. a dipolymer, acrylic resin or other medium which is readily worked when set (FIG. 7)." *Kahn*, column 3, lines 25-27. The wax or self-curing plastic is "used as the pattern for the investment material 28" for use in the "usual lost wax process" to form the "ultimate casting" (which is an actual dental crown). *See Kahn*, column 2, lines 49-52. Any wax or self-curing plastic used to form a pattern as disclosed in Kahn is not hardenable dental material for forming a dental crown as recited in claim 1.

The conventional "lost wax" process used to form articles as described in Kahn is, perhaps, more completely described in another reference cited in the Office Action – namely in U.S. Patent No. 6,283,755 to Bergström et al. The "lost wax" process is described there at, e.g., column 1, line 65 to column 2, line 17. As discussed in Bergström et al., the wax/polymer used to form the mold is lost through sublimation, etc. while the (typically molten) material used to form the finished dental article takes the place of the wax/polymer.

As such, Kahn fails to teach hardenable dental material for forming a dental crown in a body as required for anticipation of independent claim 1 because the material in the body disclosed by Kahn must be capable of replacement in a lost wax process, i.e., it is not material suitable for forming a dental crown as recited in claim 1.

In the "Response to Arguments" section of the most recent Office Action it is asserted that Kahn "does not teach that the crown form is used only for use in the lost wax process as argued by the applicant, for example, column 4 line 5...." *Office Action*, page 4 (July 8, 2008). Applicants respectfully submit, however, that the cited portion of Kahn does not support the assertion that Kahn's teachings are not limited to the lost wax process. The portion of Kahn found at column 4, line 5 is reproduced below:

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form to the irregular surface of said stub, at least said side wall comprising a readily machinable, relatively rigid material, the form further having a handle protruding from said end wall.

- 5 2. A core form useful in the restoration of a broken or otherwise degraded anterior tooth by mounting a crown on a core secured to the stub of the tooth, said form being cup-shaped comprising a side wall conforming substantially to a truncated cylindrical surface enclosing 10 circling the tooth, and an end wall conforming to the plane of truncation, said side and end walls defining a

As seen above, the cited excerpt of Kahn is essentially a portion of the preamble of claim

2. The cited portion of Kahn does not teach a dental crown form that includes a body having hardenable dental material in a tooth-shaped volume as recited in claim 1. Nor, Applicants respectfully submit, does the cited portion of Kahn teach something other than a lost-wax process for manufacturing the dental articles disclosed therein.

If it is the unstated position of the Office that Kahn inherently teaches the invention recited in claim 1, then Applicants submit that the standards for an anticipation rejection based on inherency have not been met. "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." M.P.E.P. § 2112(IV), p. 2100-47, 8th Ed., Rev. 6, (Sept. 2007) (emphasis in original) (*citing In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993)). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Id.* at p. 2100-48 (*citing Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original)).

In the anticipation rejection of claims 1 and 2, no basis in fact and/or technical reasoning was provided to show that Kahn necessarily teaches a dental crown form that includes a body

having hardenable dental material in a tooth-shaped volume. As a result, the asserted anticipation rejection cannot be based on inherency.

For at least the above reasons, Applicants respectfully submit that claim 1 is not anticipated by Kahn. Furthermore, because claim 2 is directly dependent on claim 1, claim 2 is also novel in view of Kahn. Reconsideration and withdrawal of this rejection are, therefore, respectfully requested.

The 35 U.S.C. §103 Rejections

Claims 1-18

Claims 3-6, 9, 10, 13, 14, 17, and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kahn (U.S. Patent No. 3,949,476) in view of Bergström et al. (U.S. Patent No. 6,283,755).

Claims 7, 11, and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kahn in view of Bergström et al., and further in view of Willison et al. (U.S. Publication No. 2004/0005277).

Claims 8, 12, and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kahn in view of Bergström et al., and further in view of Subelka et al. (U.S. Patent No. 6,696,507).

Applicants respectfully traverse these rejections and submit that the combination of Kahn in view of Bergström et al. (and, where stated, in further view of Willison et al. or Subelka et al.) fails to teach or suggest each and every element of claims 3-18 as required for *prima facie* obviousness.

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- Claims 3-12

Independent claim 1 (from which claims 3-8 depend) and independent claim 9 (from which claims 10-12 depend) both recite a dental crown form including, among other things, hardenable dental material for forming a dental crown located within a tooth-shaped volume.

In view of the discussion above with respect to the anticipation rejection of claims 1-2, the obviousness rejections of claims 3-8 (which depend on independent claim 1) and claims 9-12 does not meet the requirements for a *prima facie* case of obviousness because Kahn does not teach or suggest a dental crown form including hardenable dental material for forming a dental crown located within the tooth-shaped volume. Bergström et al., Willison et al., and Subelka et al., all secondary references cited in support of the obviousness rejection of claims 3-12, do not remedy these basic deficiencies of the primary reference (Kahn). Nor do any of the secondary references (Bergström et al., Willison et al., and Subelka et al.), taken alone or together, remedy the basic deficiencies of the primary reference Kahn in support of a *prima facie* case of obviousness.

For example, no discussion has been provided, as would be required to establish a case of *prima facie* obviousness, that shows why or how one of ordinary skill in the art would be motivated to replace the wax-like materials used in the lost-wax processes of Kahn (and Bergström et al.) with hardenable dental material for forming a dental crown as recited in claim 1 (from which claims 3-8 depend) and independent claim 9 (from which claims 10-12 depend).

Although these issues were discussed in Applicants' previous response to these rejections, the only attempt to address them is the statement in the "Response to Arguments" section of the current Office Action that "[a]s to arguments pertaining to secondary reference of Bergstrom et al., again the situation considered is for lost wax process and not persuasive." *Office Action*, page 4 (July 8, 2008). This statement does not, however, address the issues raised by Applicants in any meaningful manner. It does not show how or why one of ordinary skill could or would use Bergström et al. in combination with Kahn to establish a *prima facie* case of obviousness.

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Nor does it show how Bergström et al. teaches or suggests the use of anything other than a lost-wax process as discussed by Applicants.

For at least the above reasons, Applicants respectfully submit that a *prima facie* case of obviousness has not been established for claims 3-12 over Kahn view of Bergström et al.(and further in view of Willison et al. and Subelka et al. for some of the claims). Reconsideration and withdrawal of the obviousness rejections of claims 3-12 are, therefore, respectfully requested.

- Claims 13-18

Independent claim 13 (from which claims 14-18 depend) recites a dental crown including: a body defining an anatomically tooth-shaped volume, the body comprising a base and an incisal/occlusal region distal from the base; and a hollow handle attached to the body at a location removed from the base, wherein the hollow handle is in fluid communication with the tooth-shaped volume through a vent opening formed in the body.

The obviousness rejection of independent claim 13 does not meet the requirements for a *prima facie* case of obviousness because Kahn and Bergström et al. do not teach or suggest each and every element recited in independent claim 13 as required for *prima facie* obviousness.

As noted in the Office Action, nothing is identified within the disclosure of Kahn that teaches a hollow handle (as recited in claim 13). To remedy this deficiency, Bergström et al. has been cited and it is asserted that Bergström et al. "teach a dental form comprising a hollow tubular handle 5'." *Office Action*, page 2 (July 8, 2008).

Bergström et al. does not, however, actually teach a hollow handle as part of a dental crown form that includes "a body defining an anatomically tooth-shaped volume" as recited in independent claim 13. Instead, item 5' of Bergström et al. is a post of a dental implant component upon which a wax pattern may be formed. For example, column 5, lines 39-41 of Bergström et al. recites the following: "[a] wax pattern is then built-up on the dental implant component 1 around the post 5 such that the post 5 projects distally from the wax pattern."

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Therefore, Applicants respectfully submit that the post as described in Bergström et al. is not a handle of a dental crown form as recited in claim 13.

Further, it is asserted in the Office Action that "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the dental form of Kahn to have the handle of Bergstrom et al. for relieving hydrostatic pressure in view of Bergstrom et al." *Office Action*, page 3 (July 8, 2008). Applicants submit a person having ordinary skill in the art would not modify the dental form of Kahn with the post 5 of Bergström et al. because the dental form of Kahn is provided for forming a wax mold on the inside of the dental form (*see Kahn*, column 3, lines 9-10) while, in contrast, the post 5 of Bergström et al. is for forming a wax pattern around the outside of the post.

"The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007) noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit." M.P.E.P. § 2142. No reasoning or discussion has, however, been provided as to why one of ordinary skill in the art would take two such radically different processes and modify them to reach the inventions recited in claims 13-18.

If this rejection is maintained, clarification is respectfully requested as to why, given the fundamental differences between the two approaches, a person having ordinary skill in the art would add the wax formation post of Bergström et al. to the exterior of the form of Kahn. Also, Willison et al. and Subelka et al. fail to remedy the deficiencies of Kahn and Bergström et al. (nor is any attempt made to show how these references would address the shortcomings of Kahn in view of Bergström et al.).

Although these issues were discussed in Applicants' previous response to these rejections, the only attempt to address them is the statement in the "Response to Arguments" section of the current Office Action that "[a]s to arguments pertaining to secondary reference of Bergstrom et al., again the situation considered is for lost wax process and not persuasive." *Office Action*, page 4 (July 8, 2008). This statement does not, however, address the issues raised by Applicants

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in any meaningful manner. It does not show how or why one of ordinary skill could or would use Bergström et al. in combination with Kahn to establish a *prima facie* case of obviousness. Nor does it show how Bergström et al. teaches or suggests the use of anything other than a lost-wax process as discussed by Applicants.

For at least the above reasons, Applicants respectfully submit that a *prima facie* case of obviousness has not been established with respect to claims 13-18 over Kahn view of Bergström et al., and further in view of Willison et al. and Subelka et al. Reconsideration and withdrawal of this rejection are, therefore, respectfully requested.

Claims 68-73

Claims 68-73 were rejected as obvious under 35 U.S.C. §103(a) as being unpatentable over Kahn (U.S. Patent No. 3,949,476) in view of Oxman et al. (U.S. Patent No. 6,187,836). Applicants respectfully disagree with this rejection.

- Claims 68-73

As noted above, Kahn does not teach a dental crown form that includes hardenable dental material for forming a dental crown located within the tooth-shaped volume. Instead, Kahn describes a device 16 that is "filled with wax, self-curing plastic, e.g. a dipolymer, acrylic resin or other medium which is readily worked when set (FIG. 7)." *Kahn*, column 3, lines 25-27. The wax or self-curing plastic is "used as the pattern for the investment material 28" for use in the "usual lost wax process" to form the "ultimate casting" (which is an actual dental crown). *See Kahn*, column 2, lines 49-52. Any wax or plastic used to form a pattern as disclosed in Kahn is not hardenable dental material for forming a dental crown as recited in claim 1 because it is replaced during the casting process as the (typically molten) material used to form the finished dental article takes the place of the wax or polymer.

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Although Oxman et al. does teach a variety of hardenable dental materials used to form crowns, one of ordinary skill in the art would not be motivated to replace the waxes or polymers of Kahn with the materials of Oxman et al. because to do so would render the Kahn devices unsuitable for their intended purpose. The Kahn devices would be rendered unsuitable for their intended purpose because there is no teaching or suggestion in the cited references that the materials of Oxman et al. would be readily removed during the casting processes of Kahn. As a result, such a modification would violate the tenet that a proposed modification cannot render the prior art unsatisfactory for its intended purpose (*see, e.g.*, MPEP § 2143.01(V), p. 2100-140, 8th Ed., Rev 6 (Sept. 2007)).

If it is the position of the Office that the materials of Oxman et al. would inherently function properly in the lost wax casting processes disclosed by Kahn, then Applicants submit that the standards for a rejection based on inherency have not been met. "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." M.P.E.P. § 2112(IV), p. 2100-47, 8th Ed., Rev. 6, (Sept. 2007) (emphasis in original) (*citing In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993)). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Id.* at p. 2100-48 (citing *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original)).

In making the proposed modification of Kahn in view of Oxman et al., no basis in fact and/or technical reasoning was provided to show that the materials of Oxman et al. would necessarily function properly in the lost wax casting processes disclosed by Kahn. As a result, the asserted obviousness rejection cannot be based on inherency.

For at least these reasons, Applicants respectfully submit that a *prima facie* case of obviousness has not been established with respect to claims 68-73 over Kahn in view of Oxman

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et al. Reconsideration and withdrawal of the obviousness rejection of claims 68-73 are, therefore, respectfully requested.

- *Claims 70-73*

Although the above reasons alone are sufficient to show that a *prima facie* case of obviousness has not been established with respect to all of independent claims 68-73, Applicants also note that each of independent claims 70-73 also recites "a hollow handle...that is in fluid communication with the tooth-shaped volume of the body."

Neither Kahn or Oxman et al. discloses or suggests a hollow handle. Nor does the asserted obviousness rejection of claims 70-73 discuss this feature or identify how or why one of ordinary skill in the art would modify the cited references to include such a feature. This failure provides an additional basis for Applicants' position that a *prima facie* case of obviousness has not been established with respect to claims 70-73.

For at least these reasons, Applicants respectfully submit that a *prima facie* case of obviousness has not been established with respect to claims 70-73 over Kahn in view of Oxman et al. Reconsideration and withdrawal of the obviousness rejection of claims 70-73 are, therefore, respectfully requested.

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Summary

It is respectfully submitted that the pending claims 1-18 and 68-73 are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicants' Representatives at the telephone number listed below if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted

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"Express Mail" mailing label number: EM 118968296 US

Date of Deposit: November 10, 2008

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